REMARKS

The present Amendment is in response to the Office Action mailed February 8, 2007. Claims 5, 7, 9, 14, 16, and 18-22 are cancelled, claims 1-4, 6, 10-13, 15 and 17 are amended, and new claims 23 and 24 are added. Claims 1-4, 6, 8, 10-13, 15, 17 and 23-24 remain pending in view of the above amendments.

Please note that the following remarks are not intended to be an exhaustive enumeration of the distinctions between any cited references and the claimed invention. Rather, the distinctions identified and discussed below are presented solely by way of example to illustrate some of the differences between the claimed invention and the cited references. In addition, Applicants request that the Examiner carefully review any references discussed below to ensure that Applicants understanding and discussion of the references, if any, is consistent with the Examiner's understanding. Reconsideration of the application is respectfully requested in view of the above amendments to the claims and the following remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

Rejections under 35 U.S.C. 101

The Office Action rejected claims 19-22 under 35 U.S.C. 101. By this amendment, claims 19-22 have been cancelled. The rejection is therefore moot.

Rejections under 35 U.S.C. 102

The Office Action rejected claims 1-4, 6, 8, 10-13, 15 and 17 under 35 U.S.C. 102(b) as anticipated by U.S. Patent No. 5,949,672 (*Bernet*). Applicant respectfully traverses the rejection at least on the ground that *Bernet* fails to teach each and every limitation of the claims, as arranged in the claims. *See* MPEP § 2131. Thus, the requirements of anticipation are not satisfied as illustrated by the following discussion.

Bernet teaches a "three-phase matrix converter for converting AC voltages of predetermined amplitude and frequency into AC voltages of any amplitude and frequency . . ." *See* abstract. However, *Bernet* also teaches that this is achieved by using a "resonance capacitance . . . connected in parallel with each main switch . . ."

See abstract. *Bernet* also suggests that "an output capacitance of power semiconductors of the mains switches acts as a resonance capacitance." *See* abstract. In either case, *Bernet* relies on a resonance circuit. For example, the capacitive resonance taught by *Bernet*, is illustrated by the teaching that "[r]esonance capacitors C_{r11}, C_{r12}, and C_{r13} are connected in parallel with the main switches." *See* col. 4, lls. 15-16. *Bernet* further illustrates the need for resonance circuitry by teaching both inductive and capacitive commutation (forced commutation with an active switching-off process). See col. 5, lls. 55-56. This illustrates that *Bernet* uses resonant circuits to achieve commutation.

In contrast to the resonance circuits taught by *Bernet* (and associated inductors, capacitors, switches, and diodes), embodiments of the present invention are directed to an entirely different commutation technique. For example, claim 1 has been amended to require a matrix switch arrangement including a plurality of power semiconductor bi-directional switches arranged in a matrix configuration." The matrix switch arrangement of claim 1 effects commutation functions by performing timing/delay operations on the switches. For instance, claim 1 initiates the function of one switch before de-activation of another switch. Thus, the matrix switch arrangement provides a commutation interval which approaches or equals zero.

The use of resonance circuits (and associated inductors, capacitors, diodes, etc.) as taught by *Bernet*, fails to teach or suggest a matrix switch arrangement with power semiconductor bi-directional switches that perform timing/delay operations as required by claim 1.

Further, the present invention eliminates the need of any resonant circuits as taught by *Bernet*, but rather achieves the required commutation interval in a wholly different manner. Further, due to there being no resonant circuits (and associated inductors, capacitors, switches, and diodes) and a reduction in the gate drive circuits necessary, the present invention ensures that the component cost, and hence overall final unit cost, of this new form of commutation device is significantly reduced.

Moreover, this new form of commutation operation is much more reliable than the "resonant circuit" commutation method of *Bernet*. It provides commutation independent of load current, and it provides substantially improved output waveform quality as

compared to the conventional "resonant circuit" commutation methods with maximization of available output voltage.

For at least these reasons, Applicants respectfully submit that claim 1 is patentable over the cited art. For at least the same reasons, claims 2-4, 6, 8, 10-13, 15, 17, and 23-24 are also patentable over the cited art.

Conclusion

In view of the foregoing, Applicants believe the claims as amended are in allowable form. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which may be overcome by an Examiner's Amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 9th day of July, 2007.

Respectfully submitted,

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